

REMARKS

In response to the Office Action, Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments.

Discussion of Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, 15, 29, and 35 have been rejected under 35 U.S.C. § 103 as being unpatentable over JP 2002-334618 A. Applicant respectfully submits that the claims are allowable over the prior art.

At first, referring to "verified translation of Claims and paragraph 0013 to paragraph 0042 of J P 2002-334618" submitted on April 14, 2009, In Paragraph 0016 to 0018 of JP 2002-334618 A, the cited reference discloses such fine metal particle dispersion and a fine metal particle being dispersed in the dispersion. The fine metal particle being dispersed in the dispersion is of course being dispersed in an organic solvent. Thus, the fine metal particles being dispersed in the dispersion are by no means fine metal particles in the form of a dry powder.

Therefore, JP 2002-334618 A by no means discloses any fine metal particles in the form of a dry powder.

In addition, JP 2002-334618 A fails to teach or suggest such a process for preparing any fine metal particles in the form of a dry powder from the fine metal particle dispersion disclosed in Paragraph 0016 to 0018. Indeed, the reference teaches the following fine metal particle dispersion in paragraphs 0016 - 0018:

"[0016]

In addition, the present invention provides an invention of a fine metal particle dispersion that is used for the process for formation of the conductive metal film as defined by the aforementioned features, which process is used substitutionally for plating. Namely, the fine metal particle dispersion according to the present invention is:

a fine metal particle dispersion being usable to form a conductive film, which film is substitutionally used for a metal plating film, characterized in that:

said fine metal particle dispersion comprises a fine metal particle having an average particle size selected in the range of 1 to 100 nm, which is dispersed in an organic solvent that is used as a dispersion medium thereof,
wherein

the surface of the fine metal particle being dispersed therein is coated with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles, and

the compounds having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element, is capable of being detached from the surface of the fine metal particle by heat-treatment at a temperature being no higher than 250DC.

[0017]

In the case of the fine metal particle dispersion according to the present invention,

it is preferred that the fine metal particle dispersion is characterized by:

a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature of carrying out the heat-treatment for the compound having the group containing the nitrogen, oxygen or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element to coat on the surface of the fine metal particle, is dissolved in the fine metal particle dispersion, In such a case, said compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom, which is contained in the fine metal particle dispersion, is preferably an organic acid anhydride or a derivative thereof or an organic acid.

[0018]

On the other hand, the fine metal particle dispersion according to the present invention, may include

such an embodiment of the fine metal particle dispersion,

wherein, in accordance with the material of the plating film to be substituted therewith, said fine metal particle contained in the fine metal particle dispersion is a fine particle made of a metal selected from the group consisting of gold, silver, copper, platinum, palladium, tungsten, nickel, tantalum, bismuth, lead, indium, tin, zinc, titanium and aluminum, or a fine particle made of an metal alloy of two or more metals selected from the aforementioned group of metals.

Accordingly, the reference teaches such a phenomenon that in the case when the fine metal particle dispersion is heated at temperature being no higher than 250°C, the compounds having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element, is detached from the surface of the fine metal particle. As a result, the fine metal particles, from the surface of which the coating layer of the compounds is removed, will quickly sinter with each another at the temperature being no higher than 250°C, so that a conductive metal thin film is formed from the fine metal particles densely sintered.

In the case if a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature of carrying out the heat-treatment for the compound having the group containing the nitrogen, oxygen or sulfur atom, is additionally dissolved in the fine metal particle dispersion, when heated at the temperature being no higher than 250°C, the reaction of the compound having reactivity with the compounds having the group containing the nitrogen atom, oxygen atom or sulfur atom will also contribute to the process for removing the coating layer of the compounds from the surface of the fine metal particle. The compounds having the group containing the nitrogen, oxygen or sulfur atom are thermally detached from the surface of the fine metal particle. Then, the compounds having the group containing the nitrogen, oxygen or sulfur atom will be reacted with the compound having reactivity to convert the compounds into the reaction product having little capability of forming a coordinative bond with a metal element. Accordingly, such a reverse step of re-attaching the detached compounds having the group containing the nitrogen, oxygen or sulfur atom onto the surface of the fine metal particle is reduced by the reaction of the compounds having the group containing the nitrogen, oxygen or sulfur atom with the compound having reactivity, and thereby, time that is required to completely remove the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom from the surface of the fine metal particle is effectively shortened.

However, even if no compound having reactivity is additionally dissolved in the fine metal particle dispersion, when heated at the temperature being no higher than 250°C, such a step of removing the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom from the surface of the fine metal particle will be completed by using somewhat longer process time. As a result, the fine metal particles, from the surface of which the coating layer of the compounds is removed, will quickly sinter with each another at the temperature being no higher than 250°C, so that a conductive metal thin film is formed from the fine metal particles densely sintered.

Therefore, even if no compound having reactivity is additionally dissolved in the fine metal particle dispersion, any dry fine metal particles covered with the coating of the compounds having the group containing the nitrogen, oxygen or sulfur atom are by no means obtained by evaporating the solvent in the dispersion by a heat treatment at the temperature being no higher than 250°C.

The reference teaches use of compounds having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element, to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

On the other hand, the cited reference teaches additional use of a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C to accelerate such a step of completely removing the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom from the surface of the fine metal particle, when heating the fine metal particle dispersion at the temperature being no higher than 250°C.

As explained above, the cited reference fails to teach or suggest use of a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

In such a case if the carboxylic acid having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250aC would be used as a compound having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element, when heated at the temperature being no higher than 250aC, the carboxylic acid should have reactivity to the group containing a nitrogen, oxygen or sulfur atom included in the carboxylic acid itself. Such situation is quite unreasonable and full of inconsistency.

In this view, the cited reference fails to teach or suggest use of carboxylic acid as a compound having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element, to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

At least, the cited reference fails to teach or suggest use of a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C, in a case if no other compound having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with

the metal element, is used to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

The cited reference teaches suitable examples of mono-carboxylic acid such as a straight chain or branched saturated mono-carboxylic acid having 1-10 carbon as a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C to be additionally dissolved in the fine metal particle dispersion, in order to accelerate such a step of completely removing the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom from the surface of the fine metal particle, when heating the fine metal particle dispersion at the temperature being no higher than 250°C.

However, the cited reference fails to teach or suggest use of mono-carboxylic acid such as a straight chain or branched saturated mono-carboxylic acid having 1-10 carbon, in a case if no other compound having the group containing the nitrogen atom, oxygen atom or sulfur atom, which group is used as a group capable of forming a coordinative bond with the metal element, is used to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

At least, the reference by no means teaches use of mono-carboxylic acid such as a straight chain or branched saturated mono-carboxylic acid having 1-10 carbon to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

In paragraph [0030], the cited reference teaches the following reactivity of acid anhydride or acid anhydride derivative to metal oxide as well as compound having the group containing the nitrogen atom, oxygen atom or sulfur atom such as amino group (-NH₂), hydroxyl group (-OH) and sulfanyl group (-SH):

"[0030]

Specifically, the acid anhydride or acid anhydride derivative added therein is used to form an amide, thioester or ester by reacting with the compound having the group containing the nitrogen, oxygen or sulfur atom such as an amine compound, thiol compound or dial compound under heating. Once formation of such amide, thioester or ester takes place, it becomes difficult for them to form the coordinate bond to the metal atom, so that the coating layer on the surface of the fine metal particle is removed as result. Therefore, at first, the very fine metal particle is dispersed uniformly from the first, and then as the organic solvent contained in a coating film is gradually evaporated out, the particle can take a closely packing state so as to fill; and as the heat treatment proceeds, the metal surfaces make direct contact with each

other, and thus the fine metal particles undergo sintering even at a relatively low temperature. As a result, whole fine metal particles contained in the coating film are converted into a thin film of dense sintered product, the density of the thin film is comparable with that of the plating film.

Accordingly, the acid anhydride or acid anhydride derivative used for the reaction with the compound having the group containing the nitrogen, oxygen or sulfur atom at the step of removing the above coating layer is preferably added at least in an amount larger than the equivalent, on basis of the total amount of terminal amino groupSj sulfanyl groups (-SH) or hydroxyl groups contained in such a compound as amine compound, thiol compound or diol compound mentioned above. In some cases, the acid anhydride or acid anhydride derivative may also react with a thin film of basic metal oxide when heated and have a function of producing a metal salt of a carboxylic acid thereof. Thus, in consideration of the reactivity, a slightly excessive amount is selected as appropriate."

Thus, the cited reference teaches only such reactivity of acid anhydride or acid anhydride derivative ($R-CO-O-COR'$) to metal oxide (MO) when heated; $RCO-O-COR' + MO \rightarrow RCOO^-M^2+OCOR'$, but the cited reference by no means teaches such reactivity of carboxylic acid to metal oxide (MO) that when heated, carboxylic acid ($R-COOH$) would have a function of producing a metal salt of the carboxylic acid; $2RCOOH + MO \rightarrow (RCOO^-)_2M^2 + H_2O$.

Therefore, the cited reference fails to suggest that C1 to C10 linear or branched saturated carboxylic acids may be used as carboxylic acids capable of forming a metal salt with metal.

Further, the cited reference fails to suggest that a carboxylate composed of a metal cation species and a carboxylic acid anion species ($(RCOO^-)_2 M^2$) would be fixed to a metal atom on the surface contained in the fine metal particles to form the coating layer of the metal salt of the carboxylic acid on the surface of the fine metal particles.

Furthermore, the reference teaches only additional use of carboxylic acid to accelerate such a step of completely removing the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom from the surface of the fine metal particle, when heating the fine metal particle dispersion at the temperature being no higher than 250QC. However, the cited reference fails to teach or suggest any addition of carboxylic acid, in a case if no other compound having the group containing the nitrogen atom, oxygen atom or sulfur atom is used to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion.

In addition, the cited reference clearly suggests that added amount of a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C should be selected based on amount of compound having the group containing the nitrogen, oxygen or sulfur atom to be reacted with the compound having reactivity.

In view of this suggestion, the cited reference fails to suggest that in a case if no other compound having the group containing the nitrogen atom, oxygen atom or sulfur atom is used to form the coating layer on the surface of the fine metal particles being dispersed in the fine metal particle dispersion, added amount of a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C should be selected based on amount of solvent contained in the fine metal particle dispersion.

The cited reference teaches only such criteria that in the case if a compound having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250°C is additionally dissolved in the fine metal particle dispersion, in order to accelerate such a step of completely removing the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom from the surface of the fine metal particle, when heating the fine metal particle dispersion at the temperature being no higher than 250°C, amount of the solvent contained in the fine metal particle dispersion should be selected to sufficient amount to solve the total amount of the compound having reactivity.

In addition, the cited reference clearly suggests that in the case when the compound having reactivity is additionally dissolved in the fine metal particle dispersion containing the compounds having the group containing the nitrogen, oxygen or sulfur atom, the coating layer of the compounds having the group containing the nitrogen, oxygen or sulfur atom will be selectively formed on the surface of the fine metal particle at room temperature, and thereby, formation of coating layer of the compound having reactivity is effectively prevented.

At least, the cited reference fails to provide any suggestion as to whether or not any coating layer of the compound having reactivity would be formed on the surface of the fine metal particle at room temperature, in the case if the compound having reactivity is dissolved in place of the compounds having the group containing the nitrogen, oxygen or sulfur atom.

In paragraph 0034 and 0035, The cited reference teaches the following criteria for selection of solvent contained in the fine metal particle dispersion:

[0034]

As for the organic solvent used for these two purposes, different organic solvents may be used, but it is preferred that the same organic solvent is used. The organic solvent is not limited to a particular type as long as it is applicable for said two types of uses. It is preferable to select a nonpolar solvent or low polar solvent, rather than a high polar solvent in which the compound forming the coating layer on the surfaces of the fine metal particles, for example, such as an alkylamine, is so highly soluble that the coating layer on the surfaces of the fine metal particles may vanish away.

[0035]

In the process for formation of a conductive metal film that is substitutionally used for plating, according to the present invention, in addition, it is preferred that the organic solvent is capable of being relatively quickly evaporated and has thermal stability to such an extent that it does not undergo thermal decomposition even at a high temperature where a heat treatment for sintering is carried out after the step of coating. Further, in the case where a fine line is formed, as at the step of coating, the fine metal particle dispersion is applied by screen printing to form a coating film having a desired film thickness, the viscosity thereof must be kept within a desired liquid viscosity. Thus, in consideration of its ease of handling at such a step, a nonpolar solvent or low polar solvent with a relatively high boiling point which hardly evaporates around room temperature, for example, such as terpineol, a mineral spirit, xylene, toluene, ethylbenzene and mesitylene, is preferably employed, or hexane, heptane, octane, decane, dodecane, cyclohexane or cyclooctane may be also used therefor."

The cited reference clearly suggests that a nonpolar solvent or low polar solvent with a relatively high boiling point is fit to the criteria for selection of solvent, whereas a high polar solvent with a low boiling point is by no means fit to the criteria for selection of solvent. Further, the cited reference clearly suggests that the solvent is also used as a reaction solvent for the reaction of the compound having reactivity with the compounds having the group containing the nitrogen, oxygen or sulfur atom in the step of heat treatment at the temperature being no higher than 250°C.

In view of these facts, the cited reference fails to suggest that alcohol solvents having a low boiling point of 80 °C or lower, ketone solvents having a low boiling point of 80°C or lower and acetonitrile (b.p 82°C) would be used as a solvent to be contained in fine metal particle dispersion of the cited reference.

The Examiner asserted that a process for optimizing the thickness of the covering layer which the fine metal particle in the form of a dry powder preferably has will lead to the range of the thickness of the covering layer to be adjusted for the claimed fine metal particle in the form of a dry powder,

At first, in paragraph [0024], the cited reference teaches such requirement that the fine metal particle being dispersed in the fine metal particle dispersion should retain the covering layer on their surface, until the fine metal particle dispersion is subjected to heat-treatment after the formation of the coating film of the fine metal particle dispersion on the surface of the target. Further, the cited reference also teaches such requirement that the covering layer should be completely removed from the surface of the fine metal particle by heat-treatment at temperature being no higher than 250°C to directly contact the resulted fine metal particles free from the covering layer with each other, which is necessary to sinter the fine metal particles with each another.

In view of these requirements, the cited reference fails to teach any motivation to obtain any fine metal particle in the form of a dry powder having the covering layer on its surface rather than such fine metal particle that is free from the covering layer, which is needed to sinter the fine metal particle with each another. Indeed, the cited reference disclosed only a suitable procedure and condition to completely remove the covering layer form the surface of the fine metal particle. Failure of removing the covering layer form the surface of the fine metal particle, which is necessary to obtain any fine metal particle in the form of a dry powder having the covering layer on its surface, is quite opposite to the purpose of the heat-treatment step to completely remove the covering layer form the surface of the fine metal particle, which is necessary to successfully sinter the fine metal particle with each another.

Secondly, such a process for optimizing the thickness of the covering layer which the fine metal particle in the form of a dry powder preferably has requires comparison of fine metal particles in the form of a dry powder having the different thickness of the covering layer on their surface with each other. Thus, the process for optimizing the thickness of the covering layer should require such a procedure to prepare the fine metal particles in the form of a dry powder having the different thickness of the covering layer on their surface.

However, the reference fails to teach or suggest any procedure to prepare the fine metal particles in the form of a dry powder having the different thickness of the covering layer on their surface. Thus, the reference fails to teach or suggest any available approach for optimizing the thickness of the covering layer which the fine metal particle in the form of a dry powder preferably has.

Accordingly, the cited reference fails to teach or suggest any specific range of the thickness of the covering layer which the fine metal particle in the form of a dry powder preferably has. Further, the cited reference also fails to teach or suggest any available approach to specify any range of the thickness of the covering layer which the fine metal particle in the form of a dry powder preferably has.

In similar, the cited reference fails to teach or suggest any specific range of the content of the compounds having the group containing the nitrogen, oxygen or sulfur atom or the carboxylic acid, the covering layer of which is to be formed on the surface of the fine metal particle in the form of a dry powder. Further, the cited reference also fails to teach or suggest any available approach to specify any range of the content of the compounds having the group containing the nitrogen, oxygen or sulfur atom or the carboxylic acid, the covering layer of which is to be formed on the surface of the fine metal particle in the form of a dry powder.

As to the treatment for the adjustment of said covering amount of the compounds having the group containing the nitrogen, oxygen or sulfur atom or the carboxylic acid, the covering layer of which is to be formed on the surface of the fine metal particle in the form of a dry powder:

At least, the cited reference fails to provide any suggestion as to such a heat-treatment at a temperature of 100 °C or lower, in which the coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is not removed from the surface of the fine metal particles, whereas the dispersion medium is selectively removed from the fine metal particle dispersion used in the cited reference.

At least, the cited reference described that the one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, such as alkylamines, alkanethiol and alkanediol, must come off from the metal surface when the step of sintering or alloying by heat-treatment is carried out. Thus, the cited reference fails to provide any suggestion as to such a

selection of the temperature of 100 °C or lower for the heat-treatment step, which condition is very suitable to prevent the coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom from thermally removing from the surface of the fine metal particles.

Such a selection of the temperature of 100°C or lower for the heat-treatment step is quite opposite to the aim of the heat-treatment step for sintering or alloying of the process disclosed in the cited reference.

Referring to "Patent Abstracts of Japan" of JP 2002-334618A, the Abstract of the cited reference clearly described that "a coating film is put under heat treatment at 250°C or less to manufacture a metal film with metal extra-fine particles densely sintered". At least, the cited reference fails to suggest that "a coating film should be put under heat treatment at 100 °C or lower to successfully prepare the particles having the covering layer on their surface in the form of dry powder, rather than the metal film made of metal extra-fine particles densely sintered.

Further, the cited reference fails to provide any suggestion as to the specific choice of the one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom such that "said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is selected from the group consisting of diamine compounds having an alkyl substituent on one of two amino groups, hydroxyamine compounds having an O-alkyl substituent, and monoamines containing a branched alkyl group".

The cited reference also fails to provide any suggestion as to the specific choice of the thickness of the covering layer formed with the adjusted covering amount such that "a thickness of the covering layer formed with the adjusted covering amount is at least 0.5 nm or thicker, and selected in the range of 2/10 to 8/10 of the average particle size of the fine metal particles".

At least, the cited reference fails to provide any suggestion that, in place of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles, one or more carboxylic acids capable of forming a metal salt with metal contained in the fine metal particles may be used to form the coating thereof on the surface of fine metal particle being dispersed in the fine metal particle dispersion.

The cited reference provides only such a suggestion that one or more carboxylic acids having reactivity to the group containing a nitrogen, oxygen or sulfur atom at the temperature being no higher than 250 °C may be optionally added to the dispersion which comprises the fine metal particle that has been already coated with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles.

The cited reference fails to teach such a dispersion comprising the fine metal particle whose surface is covered with one or more carboxylic acids capable of forming a metal salt with metal contained in the fine metal particles, in place of the fine metal particle whose surface is coated with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles.

In conclusion, the distinctive features of the invention of the fine mental particles in the form of a dry powder as claimed in currently amended Claims 1 and 15 are by no means obvious over the cited reference. Thus, the fine mental particles in the form of a dry powder as claimed in currently amended Claims 1, 2, 29 and Claims 15, 35 are by no means obvious over the cited reference.

CONCLUSION

In the light of the applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather,

Application No.: 10/595,440
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any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Co-Pending Applications of Assignee

Applicant wishes to draw the Examiner's attention to the following co-pending applications of the present application's assignee.

| Docket No. | Serial No. | Title | Filed |
|----------------|------------|--|-------------|
| WAKAB81.002APC | 10/556871 | METHOD FOR FORMING FINE COPPER PARTICLE SINTERED PRODUCT TYPE OF ELECTRIC CONDUCTOR HAVING FINE SHAPE, AND PROCESS FOR FORMING COPPER FINE WIRING AND THIN COPPER FILM BY APPLYING SAID METHOD | 15-Nov-2005 |
| WAKAB81.004APC | 11/571249 | CONDUCTIVE METAL PASTE | 18-Jan-2007 |
| WAKAB81.005APC | 11/994199 | CONDUCTIVE CIRCUIT MANUFACTURING METHOD | 28-Dec-2007 |

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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